Semester: I/II			
Course Title	Introduction to Civil Engineering	**CIE Marks**	50
Course Code	BCVESC114/214	**SEE Marks**	50
Course Type	Theory	**Total Marks**	100
Course Category	ESC	**SEE Duration**	03 hrs
Hours Per Week	2L: 2T: 0P	**SEE Type**	Written
Total Hours	40 hrs	**Credits**	03

Course Learning Objectives
This course will enable the students to gain knowledge on
• Scope of various disciplines of civil engineering, role of a civil engineer for infrastructure development of the country, basic materials for construction and components of a building.
• Analysis of problems involving forces and moments in concurrent and non-concurrent force system.
• Computation of centroid of built-up sections.
Pre-Requisites
• Basic laws of physics, algebra, geometry and trigonometry, SI units

Module 1: Introduction and Scope of Civil Engineering	**(8 hrs)**
Broad Disciplines of Civil Engineering: Surveying, Structural engineering, Geotechnical engineering, Water resources and Irrigation engineering, Environmental engineering, Transportation engineering, Construction management. **Infrastructure**: Types of infrastructure, Role of a civil engineer for the infrastructural development of the country, Effect of the infrastructural facilities on socio-economic development of the country.	
Module 2: Materials of Construction and Building Components	**(8 hrs)**
Basic Materials of Construction: Stones, Bricks, Timber, Glass, Structural steel, Aluminium, Cement, Mortar, Plain concrete and Reinforced concrete. **Components of a Building:** Foundation, Plinth, Lintel, Chejja, Masonry wall, Doors, Windows, Columns, Beams, Slab and Staircase.	
Module 3: Introduction to Engineering Mechanics	**(8 hrs)**
Definition and sub-disciplines of engineering mechanics**,** Basic idealisations – Particle, Continuum and Rigid body, Newton's laws of motion, Force and its characteristics, types of forces, Classification of force system, Principle of physical independence of forces, Principle of superposition of forces, Principle of transmissibility of forces, Parallelogram law of forces, Resolution of forces, Composition of forces, Moment of a force, Moment of a couple and characteristics of couple, Numerical problems.	
Module 4: Equilibrium of Rigid Bodies and Support Reactions	**(8 hrs)**
Equilibrium of forces: Conditions of static equilibrium for coplanar-concurrent and non-concurrent force systems, Lami's theorem, Numerical problems. **Support Reactions:** Types of loads, supports and beams, Numerical problems on support reactions in statically determinate beams**.**	
Module 5: Centroid	**(8 hrs)**
Definition of centroid and centre of gravity, Derivation of centroid of rectangle, triangle, circle, semicircle and quadrant of a circle from the first principles, Numerical problems on centroid of built-up sections.	

Text Books:	
1	"Engineering Mechanics: Part I – Statics and Dynamics" by Ferdinand L Singer, Harper and Row
2	"Engineering Mechanics: Principles of Statics and Dynamics" by Hibbler R C, Pearson Education

3	"Elements of Civil Engineering and Mechanics" by S S Bhavikatti, New Age International Publishers.
4	"Basic Civil Engineering" by S S Bhavikatti, New Age International Publishers.
Reference Books:	
1	"Engineering Mechanics: Statics" by J L Meriam and L G Kraige, John Wiley and Sons.
2	"Basic Civil Engineering" by Satheesh Gopi, Pearson Education.

Course Outcome Statements: After the successful completion of the course, the student will be able to	
CO1	Explain the disciplines of civil engineering, role of a civil engineer for infrastructure development of the country, basic construction materials and components of a building.
CO2	Explain the basic concepts of concurrent and non–concurrent force system to solve engineering problems.
CO3	Apply the principles of engineering mechanics to analyze concurrent and non–concurrent force system.
CO4	Calculate centroid of built-up sections.
CO5	Prepare a report on mega civil engineering projects, on sustainable construction materials and on green buildings.

Course Articulation Matrix

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1										2
CO2	2										2
CO3	2	2		1							2
CO4	2	2		1							2
CO5	1	1		1				2	2		2
Avg.	**2**	**2**		**1**				**2**	**2**		**2**

3: High, 2: Medium, 1: Low